



VOLUME XV JUNE 1959 NUMBER 6

3/ **Clinical**  
**Proceedings**  
OF THE  
2/ **CHILDREN'S HOSPITAL**  
1/ **WASHINGTON, D. C.**

PANEL DISCUSSION: THE PEDIATRICIAN'S ROLE IN EARLY CHILD DEVELOPMENT.

*William S. Anderson, M.D., Nancy Bayley, Ph.D., Richard Q. Bell, Ph.D., Reginald S. Lourie, M.D., and Julius B. Richmond, M.D.*..... 127

CASE CONFERENCE: FULMINATING VIRAL HEPATITIS.

*Grace H. Guin, M.D., and Irving B. Brick, M.D.*..... 138

UNTOWARD REACTIONS FOLLOWING THE USE OF PROCHLORPERAZINE (COMPAZINE): A REPORT OF TWO CASES.

*Salvatore V. Battiala, M.D., and William R. O'Reilly, M.D.*... 147

THE EDITOR'S COLUMN: C. MELVIN SHARP HEALTH SCHOOL..... 150



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about  
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Age	No. Cases	Loose Stools <sup>1</sup>
Birth	14	0
1 mo.	36	0
2 mo.	27	1
3 mo.	12	1
4 mo.	10	1
5 mo.	14	0
6 mo.	8	0
7 mo.	19	0
8 mo.	11	0
9 mo.	10	0
10 mo.	8	0
11 mo.	11	0
12 mo.	10	0
	190	3 (1.6%)

<sup>1</sup>Exclusive of infants admitted with infectious diarrhea.

1. Frost, L. H., and Jackson, R. L.: J. Pediatr. 39: 585-592 (Nov.) 1951.

2. Henrickson, W. E.: GP 8:51-56 (Oct.) 1953.

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PUBLISHED MONTHLY BY THE STAFF AND RESEARCH FOUNDATION OF THE CHILDREN'S HOSPITAL, WASHINGTON, D. C.

Cases are selected from the weekly conferences held each Friday at 12:30 P.M., from the Clinicopathological conferences and from the monthly Staff meeting.

This bulletin is printed for the benefit of the present and former members of the Attending and Resident Staffs, and the clinical clerks of Georgetown and George Washington Universities.

Subscription rate is \$3.00 per year. Those interested make checks payable to "Clinical Proceedings Dept." The Children's Hospital, Washington, D.C. Please notify on change of address.

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## Panel Discussion: The Pediatrician's Role in Early Child Development\*

WILLIAM S. ANDERSON, M.D.,† NANCY BAYLEY, Ph.D.,‡  
RICHARD Q. BELL, Ph.D.,§ REGINALD S. LOURIE, M.D.,¶ AND  
JULIUS B. RICHMOND, M.D.||

Dr. Anderson:

The older he gets, the more and more inadequate does the practicing pediatrician feel about his handling of parent-child relationships. I think it behooves all of us who deal with children to take stock of ourselves on occasion; to re-evaluate the methods that we use in our offices, our own attitudes, and our approaches toward our families and children; and to try to sharpen our powers of observation often dulled by the load of everyday routine office practice. Perhaps that is what this panel can help us do today. It seems to me we should try to think of certain things in routine pediatric care: 1) to encourage permissiveness but not to the exclusion of discipline—to try to hit the happy medium; 2) to act perhaps as a family counselor and yet to encourage the inherent right of parents to make their own decisions as to the welfare of their children; 3) to be continually on the alert for deviations from the line of progress toward physical and emotional maturity; 4) to observe closely parental (including the father's) attitudes as they relate to family interrelationship; and 5) finally, to be a good listener. In our crowded offices, to quote Robert Louis Stevenson, in "the daily irritating rounds of concerns and duties," none of us takes enough time to listen when our mothers want to get something off their shoulders.

Dr. Bayley:

I have had the good fortune to have done a longitudinal study which lasted from the time children were born (I saw most of them myself first when they were one month old) until they were 25 years old; therefore we

\* Presented as part of the Children's Hospital Alumni Day, May 24, 1958.

† Chairman of Medical Staff, Children's Hospital, Clinical Professor of Pediatrics, George Washington University School of Medicine.

‡ Chief of Section on Child Development, Laboratory of Psychology, N.I.M.H., National Institutes of Health, Bethesda, Maryland.

§ Staff, Section on Child Development, Laboratory of Psychology, N.I.M.H., National Institutes of Health, Bethesda, Maryland.

¶ Attending Staff, Director, Psychiatry, Children's Hospital; Associate Clinical Professor, Pediatric Psychiatry, George Washington University School of Medicine.

|| Professor and Chairman, Department of Pediatrics, State University of New York, College of Medicine in Syracuse.

have some rather long term experiences with these people and know how they turned out. Of course 30 years ago when the study was started, we did not have nearly as much knowledge about the kinds of things we now realize are relevant, so that our experiments were not as carefully controlled. But very soon after we started testing and measuring infants, we did find out that what the mother said and did made a great deal of difference. In the course of this study, we performed mental tests, whole series of physical measurements and the type of general physical pediatric examination ordinarily done in a well baby clinic, with additional emphasis on observing things that might show developmental change.

It might be useful to mention some of the material from this longitudinal study as it has been further analyzed and evaluated in our laboratory in Bethesda. This material has been organized so that we can test some of the relationships between the mothers' behavior and that of their children. The mothers' behaviors during the testing sessions with the infants were classified and rated on a series of relevant categories of maternal behavior. For example, certain things a mother said and did indicated that she granted the child quite a bit of freedom or autonomy; on the other hand, a mother might show excessive contact with the child, be intrusive, and continuously interact with him. Thus we have a continuum of freedom versus control.

Another kind of behavior we were able to recognize was in the dimension of love versus hostility. The mothers who tended to be cooperative in working with the child and the doctors were also more likely to express love and affection generally. On the other hand, there were tendencies for some mothers to ignore their children, to be punitive and irritable.

Of course, these characteristics of maternal behavior are continua, so that a few mothers were at one extreme and a few at the other, with most of them somewhere in between. In the analysis of these maternal behaviors we found that the kinds of behavior exhibited by the mothers toward their sons and toward their daughters differed according to the socio-economic status of the mother. For example, mothers from the higher socio-economic level tended to treat their children more in a co-operative, equalitarian, affectionate manner as observed in the tests, while the lower socio-economic mothers tended to be more irritable, punitive and ignoring. It is rather interesting that these relationships correlate more highly for the boys than for the girls. It would be interesting to explore further, in other populations of children under 3 years of age, if higher status mothers tend to grant more autonomy to their sons than to their daughters, and lower class mothers tend to be excessively in contact and intrusive toward their sons.

We were also able to compare the type of baby with the type of mother. Those mothers who granted some autonomy and were co-operative, affectionate and equalitarian, tended to have babies who were happy and calm,

and had a somewhat positive reaction to this kind of testing situation. Conversely, mothers who were intrusive, irritable, and punitive, and who tended to be ignoring, also tended to have babies who were rated as unhappy, negative and excitable. Of course, these correlations just indicate tendencies in this direction.

We found, also, that the active babies are more often the ones whose mothers are irritable and punitive. The inactive, quiet babies tend to be those whose mothers are co-operative and equalitarian in their treatment. Furthermore, we found that the babies whose mothers were the irritable, punitive ones, tended in the first year of life to make higher scores on the developmental tests, while the good mothers had babies who tended to make lower scores. However, this relation between higher developmental scores and punitive mothers became reversed, usually between one and two years of age, so that later on the high I.Q.'s quite consistently belonged to the babies of the mothers who were more co-operative and equalitarian. The pattern is so complex that we can not say unequivocally that the children's behavior was a result of the way the mothers treated them; I think there may be a cultural pattern of expectancy or values for people of different socio-economic levels. The lower socio-economic parents may feel that the way to bring their children up right is to be punitive, and to flare up and be irritable—in general, to "make them mind."

Dr. Bell:

I would like to comment on the possible effect of the nature of the infant or child on the appearance of the mother in the examination situation. There may be a convergence of factors affecting the mother here. How she is functioning in the home will be reflected in how she appears in the examination situation; mothers who look irritable, disturbed and upset are very frequently from the lower socio-economic level.

Our study was started during the depression, and in such a period, economic stress and housing limitations maximized class differences; consequently a mother who was short of money, short of space, and with a very active, male baby, had a lot of problems on her hands. A mother in an upper income home may have felt some effect from the depression, but it did not put stress on her in the same way. In addition, if she had a female child, or a male child who was very passive and bland and entertained himself a good part of the time, she had less reason to be irritable and upset.

I would like next to consider some possible indicators of the quality of the mother-infant relationship in the well baby clinic type of examination. What are some clues that will give us an idea of how the mother and infant are functioning? Dr. Bayley's early records impressed me because the very first contact with infant and mother in the very first month after birth re-



vealed many omens of the nature of the future relationship. There was much material in that first session which, if attended to carefully, gave an observer a very good view of how the mother and the infant were functioning. In attempting to follow up these leads we carried out a recent study in which 40 infants were observed in the nursery at about the fourth postnatal day and then again at one month of age; the latter examination occurred in a situation patterned after a well baby clinic visit. These sessions ran about an hour and a half and were filmed and recorded so that afterward they could be intensively studied.

As Dr. Bayley mentioned, relationships can be considered as a continuum, and superficially similar relationships may be on quite different bases. For example, one kind of a close relationship is an overstimulating one; this is very different from an anxious, overprotective relationship which is oriented around concern about what is going to happen to the baby. In the more distant relationships, we see everything from mothers who are merely indifferent and uninterested to mothers in whom we can detect anger, hostility and annoyance with the baby.

We found that the first and the most solid indicator of the closeness or distance of the mother-infant relationship at the one-month examination was how much the mother knew about the infant. We asked the mother a number of questions about the infant's characteristics: "How does he react to quiet sounds like the ticking of the clock, or loud sounds such as the slamming of doors, or the radio? What about handling? How does he react to light? How sensitive is he to light?" It would be difficult to take the time to ask such details in the usual pediatric practice. It was, however, very evident that the mother who had a close relationship with her baby simply knew a lot about the baby's quirks and idiosyncrasies. Many of you have encountered mothers who have noticed that the baby fussed a lot when he was put down after a feeding. One mother mentioned this to us, but said, "I soon found out that what I had to do was to get my baby high up on the crib and move the furniture so that he could watch me." She had noted this little quirk in her baby.

One thing that bothered us was that some mothers are naturally more talkative than others, and we wondered whether the quiet mother just does not care as much about her baby, or whether she was just rather cryptic. In trying to evaluate this lack of communication we discovered something very interesting. By reviewing the complete records we found out that those mothers who were generally uncommunicative, and who gave other indications of a rather distant relationship with their infants, had a tendency to become much more voluble and much more involved when we asked them about their pregnancy, labor and delivery, or about their health in general. We obtained a very satisfactory indication merely by counting the number of words in response to questions about the mothers' health



versus questions about the baby. This difference in the mother's responsiveness gave us a little clearer picture of what kind of an environment the baby was exposed to.

For example, the mother who had a very distant relationship with her infant failed to relate any positively toned incidents occurring during the day. To derive this kind of information we asked the mother to describe a 24 hour period of the baby's day. This approach gave the mothers with a close relationship an opportunity to mention many little things that they enjoyed very much or that they needed to do. This distinction between enjoyment and need is important because some mothers overprotect their babies and are very close in a more driven way; how much enjoyment they are getting out of the relationship, however, is questionable. We also learned that mothers who had more distant relationships seldom used "we" in describing the baby's activities, but used "he," as if the mother were an observer rather than a participant in the activity. In addition we noted that when the mother came into the room, and we told her that she could sit down in a very comfortable chair and either hold the baby on her lap or put the baby in the nearby crib, with a very high frequency, the mother with a close relationship kept the baby right on her lap, and often kept him there until we asked her specifically to put the baby in the crib. At the other extreme, one mother in Dr. Bayley's study would bring her baby in for an examination, leave him, and ask if she could go out shopping.

The area all have mentioned as being most difficult to investigate is how the father functions in these relationships; in this respect we have not done any better than anyone else. Our main concern was whether the father was supporting the mother in handling the baby, or whether he was jealous and hostile and a disturbing factor in the relationship. This information was very difficult to obtain, and since we were not directly interested in it during this particular study, I can mention only a few relevant points which were noted incidentally in connection with other questions we asked regarding whom the baby looked like and resembled in character and personality. One mother had told us quite a bit about a very difficult situation with her husband's mother who had been poking her nose into the relationship and making the husband take sides against his wife in regard to handling the baby. When we later asked her whom the baby looked like, she said, "Well, he has my mother-in-law's nose." Another mother, when asked, "Whom does the baby look like?" answered, "Him." We asked who "him" was, and she said, "My husband." We then asked, "What about the baby's character?" and she answered, "Just like my husband—selfish. He has to have everything just when he wants it. He has to have his bottle right then. Impatient, just a baby." We were not sure whether she was talking about the husband or the baby.

In general, what we learned from such questions in these examinations

was something of the mother's own history and her own adequacy as well as the situational context. Her relationship with her husband, current family problems, the relatives—all of these things are assimilated into her perception of her baby and have an effect on how she is relating to him. Very often a mother had a lingering suspicion that this was not her baby, that someone had switched babies. This feeling came up in subtle ways.

Another thing that impressed us very much was the impact on the young mother of the dictatorial nature of her infant's personality. All mothers were bothered by this. So many times we heard, "He's stubborn," or "He has to have his own way," "He's just like my husband," or "I'm afraid he's just like me because he has to have his own way." I was rather impressed with this as being one of the central problems in a mother's coming to terms with her baby. Many a young mother was quite perturbed because her baby was getting his way all the time, and she almost never got her own way. So we see that just as the mother's personality has an effect on the baby, his feelings and demands on her are also an important matter in their relationship.

Dr. Lourie:

It occurs to me that the new techniques the members of the panel have discussed really are only extensions of what we have been using all the time. In the physical examination of children, our basic tools are observation and auscultation. What we are hearing about today is really a new use of these techniques we already have. As we become less preoccupied with acute illness, we will have to be more preoccupied with what else there is to observe. Our previous speakers have pointed in the direction of what we need to observe and for what we need to listen.

When we begin to point out all the individual differences in reaction of babies, as well as the differences in the reaction of their mothers, we are not really discovering anything that the mothers could not tell us themselves. Our role as doctors in these situations is to help the mothers understand what they know. To do this we ourselves have to understand these differences.

As both Dr. Richmond\* and members of the panel have pointed out, it is from outside of the specialty of pediatrics that these insights are coming for pediatricians to use. I would like to reinforce Dr. Richmond's point on the importance of our including more and more of these other disciplines in the training of pediatricians. This concept, incidentally, is not anything new, although we probably have not taken full cognizance of it. Anthropologists, for example, have probably been the people who have most in-

\* Richmond, J. B.: The role of the pediatrician in early mother-child relationships, *Clin. Proc. Child. Hosp.* 15: 101, 1959.

fluenced the pediatrician's thinking about toilet training. It was not until the anthropologists began to study our own culture that they found that there were parts of the country, particularly in the backwoods of Tennessee, where nobody toilet-trained children. When the mother had to go to the outhouse, she couldn't leave the baby behind, and at a certain point in his development, usually between 16 and 18 months of age, the baby became interested and curious in the way mother was using the outhouse and began to try to use it in the same way. Lo and behold, the baby was trained without anybody doing anything about it. This is just one small illustration of the influences that the anthropologists have had on the practice of pediatrics.

This logical conclusion to all this is that these disciplines should become integrated into the training of pediatricians. In child psychiatry, particularly, we will thus be training ourselves out of jobs. The pediatricians will be the child psychiatrists of the future, because the difficulties that children run into begin in the very earliest transactions that take place between mothers and children. It is in the handling of little details of separation, of aloofness, of avoidance, of constitutional differences in the natures of irritability, or of overresponsiveness that the pediatrician has an important role. At the present time, we in psychiatry and psychology are supposed to know about some of these things, and although the pediatrician who has been in practice for quite a while does not put them into words, he, too, knows and uses them all the time. He is a trained observer, after all, and he comes to know the need to differentiate between one baby and another, and the different ways they need to be handled. If later behavioral problems originate in foundations established in the earliest years, the pediatrician has the greatest opportunity to influence the personality pattern and the interrelationships between mother and child.

As we have heard from Doctors Bayley and Bell, there are all kinds of people in this world, and most of them become parents. These people have all sorts of idiosyncrasies. When the individual makeups of mothers are matched with the individual makeups of their babies, there are almost innumerable possible combinations. I have been impressed with the great tolerance that babies have for all these individual differences in their mothers and with the equal tolerance that most mothers have for the individual differences of their babies. It is only in the more exceptional case that difficulty arises. In addition to this two-way transaction, we add a third factor when we consider the father; this adds many more possible combinations.

However, this morning a fourth element has been introduced into the picture: this is the pediatrician. I would like to say a word about this individual. All kinds of people become pediatricians and this is a good thing.

For example, some pediatricians who are rather dictatorial and forceful people put a lot of pressure on the mothers and insist that certain things be done. The passive mother who feels helpless or inadequate makes a wonderful combination with a pediatrician who backs her up and sees that the child's needs are met. On the other hand, if a mother who cannot think in any but permissive ways meets a pediatrician who tends to think along more rigid lines, there will be a clash. In the areas where there is a choice of pediatricians, we therefore find that certain kinds of mothers gravitate to certain kinds of pediatricians. This also means that the pediatrician needs to keep an eye on himself. The more the pediatrician is aware of those areas that are difficult for him to handle in a mother, the larger is the group of mothers to which this pediatrician can be of service. If, for example, a pediatrician had a younger brother with behavior just like a specific child he has to take care of, perhaps an overdemanding, overactive child who took all his mother's time, then the pediatrician may resent this type of child. He may then be unable to help in alleviating the child's difficulty unless he has some awareness of what his own feelings are and is able to keep them under control.

Dr. Richmond:

Dr. Bayley has raised some very interesting points concerning social and economic status and child development. The impact of social and cultural environment on individual parental attitudes is communicated to the baby in terms of physiologic function. These include how he is fed, how he is diapered, how he is fondled, and how his parents respond to his activity pattern. As we think in pediatric terms about this biological communication, it is important that we recognize the cultural background which lies behind the communication of parents to infants.

Dr. Lourie has raised an interesting point about the pediatrician and other professional workers concerned with children, and I would like to present one example of the significance of an objective and comprehensive point of view in various professional practices related to child care. Not long ago, a social worker in an adoption agency was discussing with me the problem of trying to pick the "right baby" for the "right parents." She said, "Wouldn't it be terrible if we gave one of these very hyperactive babies to a very placid, calm and collected mother?" And I said, "Well, that's one way of looking at it, but if one continues in this vein, wouldn't it be equally terrible if you gave a very placid, calm and collected baby to a very hyperactive irritable mother?" What I am implying is that the adoption worker was communicating to me that she was identifying predominantly with the parent and not with the baby. Inasmuch as we, as pediatricians, are often called upon to make some judgments in relationship to

adoption practice, I think it is important to keep in mind that we do not really know enough yet to be certain about some of the choices we make. In training programs for our residents, it often becomes obvious that each resident presents unique problems in relating to certain kinds of parents and children. If one watches a resident in his contacts with patients for a long enough period, one can identify what kinds of problems are present, and thereby often help him gain some insight into these problems.

We, too, have been interested in the variation in the mother's ability to tell us details about the baby's routine, but with a somewhat different point of view than that of Dr. Bell. In our clinical experiences with older children who developed psychosomatic disorders such as ulcerative colitis, asthma, or eczema, we were impressed that the histories concerning the early experiences of these infants did not seem to describe a comfortable mother-infant relationship in the first year of life. We thereupon undertook a retrospective study, and went back and specifically inquired into what the mother knew of the life of the baby during the first year and a little beyond. We then compared the mothers of children with psychosomatic disorders with the mothers of children who had physical disorders of various kinds. We were struck with how little the mothers of the children with psychosomatic disorders could really tell us about the life experiences of these babies in the first year. From this we felt that it would be possible to formulate two hypotheses: 1) that these mothers were so psychologically remote from their infants in the first year of life that they did not have any basis for recalling what these babies' experiences were, or 2) that these experiences were sufficiently difficult for the mothers that they repressed what their babies had experienced during the first year of life. In any retrospective study these are extremely difficult problems to resolve. From the anterospective studies of Dr. Bell and Dr. Bayley, and from similar studies by others, we will, I think, know a good deal more about the impact of intimacy or lack of intimacy in these early experiences on later development of the child.

Dr. Bell pointed to the patterns of response of young mothers, and I think that his data may indicate that these young mothers are still very much in a stage of growth themselves. Many mothers we see are as young as 18 and some are only 16; these young women are really not through their own adolescence when they begin to have babies. We have been impressed that although these mothers are verbalizing great dependency needs for themselves, many are actually quite effective in meeting the dependency needs of their very young infants. On the other hand, it is not unusual to see a mother, like one in our study, who has had five children and who, in dealing with her sixth, still seems very inept. In other words, the mother's age and maternal experience do not always predict her capacity to meet her infant's needs.

*Question:* Is finger sucking always a neurotic trait? If not, when does it become one?

Dr. Bell: For the usual answer to this, the total situation must be investigated; for example, the amount of stimulation the child is getting, the modes of expression for his energies, his contact with other children, and the satisfaction of his motility needs. Another thing which has to be added to this usual picture is the difference in the sucking needs of different infants; this is often obvious by the third or fourth day of life. If in most areas of living the child has an opportunity to meet his needs, but persists in a fair amount of sucking or chewing, it may be that this child simply has a constitutionally greater need for oral activity.

Dr. Bayley: In the Berkeley studies it was found that a very large proportion of infants actually did suck their thumbs for a while. There was a tendency for a slight correlation between thumb sucking in the baby and harmony in the family. Apparently a certain amount of finger or thumb sucking in infancy is pretty normal developmentally and does not mean anything very neurotic unless, as Dr. Bell has said, it becomes somehow a channel for gratifying needs that cannot be met in another way.

Dr. Richmond: I believe that we must leave this in the realm of clinical judgment. If the number of rhythmic motor activities is large, for example, if the child is engaging in what seems to be intensive and constant finger sucking, body rocking, hair twisting and an excessive amount of masturbatory activity, obviously one would want to look into the situation. On the other hand, all children, as Dr. Bayley has indicated, may do some of this, even in a relatively comfortable relationship. Under these circumstances, it is important for us to explain this to the family so that it does not secondarily become a problem.

*Question:* How do you explain the difference in the rate of juvenile delinquency in the sexes? Very often males are charged with being beyond their parents' control, but females to a lesser extent.

Dr. Bayley: There do seem to be some definite differences in the way mothers react toward their boy babies as compared to their girl babies. We have also found closer relationships between maternal behavior and the way the boy babies react. Some of these relationships I find very hard to explain, but I think they may be partly explained by the fact that the juvenile delinquent is usually a teen-ager who is in a period of rapid growth and physical maturing, and also in a period of confusion and inconsistency in developing controls and mature judgments. The boys are active and outgoing, and are more likely to get into trouble with the law by property destruction or other violent activity. Girls are a little more docile and less energetic, and are less likely to get into the more overt kinds of trouble;



however, their sexual delinquency is more likely to constitute a problem. As for the relationship between maternal behavior and these things, much more study is needed before a clear answer is possible.

Dr. Bell: When we talk about delinquency we must realize that we are only speaking in terms of the difficulty that the child is experiencing in the community. It does not tell us what is going on within the child to make him act this way. We must remember that the youngster in the classroom who is withdrawn, the girl who has developed a severe degree of anorexia prior to the onset of the menarche, or the child who goes on to develop extreme obesity during adolescence may be reflecting considerable emotional difficulty, even though it does not cause trouble with the law or other organized institution.

Dr. Lourie: We have come to think that the child who acts out and who is labeled delinquent is in some ways luckier than his brothers and sisters with the same problems who are reacting with quieter symptoms. The children who are acting out are, in a sense, forcing people, even the community, to do something about it. It is very worthwhile to watch the quiet ones too.

*Question:* What advice would you give the mother with her first newborn regarding allowing her baby to cry? When is it evident that the baby is crying to be rocked or walked or loved, rather than because of physical discomfort? Should the newborn be allowed to run the house and at what age should disciplining begin?

Dr. Lourie: It is a large order to answer this question completely. Crying in babies can have very different meanings and mothers can be helped to know what such crying means. For example, sometimes the crying is purely pleasurable and would not need to be interrupted. It can be another of the rhythmic activities that we have been talking about. All pediatricians know babies who cry from two to four hours every day even though there is apparently nothing wrong with them. As to whether the newborn should be allowed to run the house, I would use this question to emphasize the point that parents have rights too. The whole idea of a newborn running the house is something that is very much related to the kind of mother it has and the kind of relationship that she is establishing. The question of the right age for disciplining to begin evolves into the whole idea of what you are disciplining. If you are disciplining the sphincters, you are talking about a different problem and a different timing than if you are disciplining feeding. The urges and the drives of babies always need to be controlled. This is the difference between a human infant and an animal. We have to teach our babies to grow and to live by controlling their instincts and drives, and this disciplining is in terms of what is acceptable or "normal" for the culture and the particular family.



Dr. Bell: If the term "discipline" is changed to something like "guidance" or if discipline is considered in the more broad terms of when the mother and the infant have to work out a pattern that is mutually tolerable to both, the answer would be right from the first day of life. For example, there is really no such thing as demand feeding. What it amounts to is that the mother and the infant, just as in adult social relations, have to work out some kind of a system which will work for both; here is very early evidence of mothers modifying the demands of the infant.

Dr. Richmond: I would also agree that discipline should start right from the first if we define discipline as emerging patterns of behavior which will facilitate the child's growing to live in a social setting. Initially, most of the limits are set around the child's physical safety; then as time goes on we broaden this to incorporate social and cultural patterns. It is important that we view the setting of limits as being helpful rather than destructive in terms that Dr. Lourie has already indicated. We must appreciate that younger children may be impulsive. For example, the 2 to 3 year old who has a new sibling in the home may not be able to control all of his feelings about the sibling all of the time, so he needs help from the outside in the form of parents or other caretaking figures to control his hostility toward the new baby. As time goes on, of course, he should require less control from *without* and develop more from *within*.

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## Case Conference: Fulminating Viral Hepatitis

GRACE H. GUIN, M.D.,\* AND IRVING B. BRICK, M.D.†

Dr. Guin:

Records at Children's Hospital indicate that in the past 10 years there have been 70 children on whom a diagnosis of viral hepatitis was made. Of this group, the case to be presented and one other are the only two which have terminated in death.

### CASE REPORT

This 11 month old Chinese boy was admitted to Children's Hospital for the first time on November 11, 1957, because of irritability, intermittent fever, jaundice, and jerking movements of the eyes, arms, and hands.

The infant was born at term and weighed 7 pounds 4 ounces. He had developed

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\* Associate Pathologist, Children's Hospital.

† Associate Professor of Medicine, Georgetown University School of Medicine; Chief, Gastroenterology Clinic, Georgetown University Hospital.

normally up to one month before admission. At that time he was noted to have nocturnal temperature elevations of 103° F.; these responded to aspirin, and following this he would remain afebrile for several days before the febrile episodes resumed.

Two weeks before admission he had an ear infection which was treated with penicillin and streptomycin. Nine days before admission his urine was observed to have an orange color and his stools were described as gray and "foamy." Four days before admission his conjunctivas were noted to be icteric, and pedal edema developed. The infant then became anorectic and vomited once daily; the day prior to admission, the vomitus was "coffee ground" in appearance.

The infant was initially seen at another hospital, where liver function tests were found to be markedly abnormal. Blood transaminase was 4080 units. He was noted to be semicomatose and had a clonic convulsion. He was then transferred to Children's Hospital.

The family history was relevant in that his father was said to have had hepatitis in 1951.

The admission physical examination disclosed a well developed and well nourished infant who appeared lethargic and icteric. His rectal temperature was 98.8° F., pulse rate 128 per minute, and respirations 32 per minute. The skin was warm and dry. The head was normocephalic and the anterior fontanel was almost closed. Both scleras were icteric. The pupils were dilated and equal. Ears, nose, mouth and pharynx were not remarkable. The neck was supple. The chest was symmetrical, the lung fields were clear to percussion and auscultation, and the heart revealed no abnormality. The abdomen was distended but soft; no organs or masses were palpable. The genitalia were normal. Superficial and deep tendon reflexes were physiologically hypoaactive.

Admission blood count showed a hemoglobin of 9.1 Gm. per 100 ml., a hematocrit of 29 per cent, leukocyte count of 25,400 per cu. mm. with 62 per cent mature neutrophils, 6 per cent band forms and 32 per cent mature lymphocytes. The red blood cells appeared normal. The urine was amber in color and acid in reaction. Specific gravity was 1.027. Albumin was present in an amount of 75 mg. per 100 ml., and sugar and acetone were present in trace amounts. The urine was positive for bilirubin but negative for urobilinogen. Spinal fluid showed no cells, a protein of 18.5 mg. per 100 ml. and a sugar of 13 mg. per 100 ml.

Capillary blood sugar was 20 mg. per 100 ml., blood urea nitrogen 10.5 mg. per 100 ml., carbon dioxide combining power 14.1 milliequivalents per liter, serum chloride 108.3 milliequivalents per liter, serum sodium 135 milliequivalents per liter and serum potassium 5 milliequivalents per liter. Blood type was A, Rh positive. The Coombs' test was negative. Prothrombin time of a control was 14 seconds; the prothrombin time of the patient was 76 seconds.

Immediately following admission, therapy with intravenous fluids, chloramphenicol and parenteral vitamin K was started. A Levine tube was inserted into the infant's stomach for relief of abdominal distension and a bloody mucoid fluid was obtained. Despite treatment, his condition slowly deteriorated; his respirations became Cheyne-Stokes in character and an electrophrenic respirator was employed. He was transfused with 80 ml. of whole blood and given additional vitamin K parenterally. He remained lethargic however, and terminally developed seizures involving arms, hands and eyes. Death occurred 24 hours after admission.

#### DISCUSSION

Postmortem examination of this infant showed a liver which was approximately one-third smaller than normal and green in color. The surface

differed in appearance from the liver of an adult with acute infectious hepatitis in that it showed a miliary type of granular elevation with no variations in size of these lesions as is seen in the nodular type of liver in an adult. On cut section, the liver was fairly firm. Microscopically, there were areas of beginning fibrosis, but the most prominent change was a marked proliferation of the small bile ducts. We were unable to identify the so-called parenchymal giant cells which are commonly found in children dying of viral hepatitis. There was no regeneration of liver cells that we could identify.

There were no other significant gross findings at autopsy other than pulmonary hemorrhages which were probably terminal and reflected the effects of an increased prothrombin time.

It is regrettable that this child was unable to survive. Judging from the degree of hepatic destruction, however, should he have survived this acute illness, I believe he would have been one of those unfortunate ones who would have terminated later with a cirrhosis.

In considering the differential diagnosis of prolonged obstructive jaundice in early infancy, there are three main causes which should be kept in mind, atresia of the bile ducts, posterythroblastosis and neonatal hepatitis. These, as a rule, can be differentiated by good clinical judgment and a few laboratory tests. In most instances, the inspissated bile syndrome due to erythroblastosis can be ruled out on the basis of blood-grouping tests. Biliary atresia and neonatal hepatitis are somewhat more difficult to separate and may require a period of watchful waiting. If any doubt exists, surgery for correction of a possible biliary atresia should be postponed until a more exact differential diagnosis can be made, since infants with neonatal hepatitis do poorly following surgery. Serial liver function tests should be performed, and at the end of a month, if there has been a steady increase in serum bilirubin, absence of urobilinogen in the urine, no bile in the stool, negative flocculation tests of liver function and absence of blood group incompatibility, surgical exploration is probably indicated.

Gellis and associates<sup>1</sup> collected a group of 42 neonates with hepatitis. Of this group, 29 were living and well, 4 were living with the disease, i.e., jaundice and/or cirrhosis, and 8 had died. There was no follow-up on one patient. They noted that cortisone administration will sometimes help differentiate between atresia of the bile ducts and neonatal hepatitis. Cortisone may reduce dramatically the level of serum bilirubin in an infant with neonatal hepatitis, whereas it will exert no effect in an infant with biliary atresia.

What is the etiology of neonatal hepatitis? Is it due to the virus of epidemic viral hepatitis or the virus of homologous serum hepatitis? The long incubation period and the low incidence in infancy probably indicate that

neonatal hepatitis is due to the virus of homologous serum hepatitis. In addition, Stokes and co-workers<sup>2</sup> were able to transmit homologous serum hepatitis to several human volunteers with blood taken from both a mother and her newborn infant.

Unlike those with infectious hepatitis, most persons exposed to the virus of homologous serum hepatitis do not appear to develop antibodies and thus become silent carriers. Janeway<sup>3</sup> carefully charted each case of hepatitis he observed over a period of 15 years. During this period he also charted the number of cases of acute yellow atrophy of the liver that occurred. He noted that while the incidence of acute yellow atrophy remained about the same from year to year, it bore no relationship to the varying incidence of the numbers of cases of the epidemic type of hepatitis. He concluded therefore, that acute yellow atrophy was not due to the virus of infectious hepatitis but more likely due to that of homologous serum hepatitis.

We still await complete confirmation of the virus which does cause neonatal hepatitis. Until this confirmation, we feel the term neonatal hepatitis is a more reasonable one than infectious hepatitis.

The histological picture of viral hepatitis in children differs from that in adults. Craig and Landing<sup>4</sup> feel that the finding of giant parenchymal cells in the liver is more or less characteristic of viral hepatitis. As mentioned earlier, the present case showed none of these. It is reasonable, however, to assume that the same virus could affect livers in different ways. Anderson<sup>5</sup> re-examined liver sections obtained at post mortem and surgery and set aside those that showed these giant cells. She found 12 such cases. When an attempt was made to correlate the clinical histories with the histological findings of these 12 cases, 6 were found to have had a clinical diagnosis of Rh erythroblastosis, 3 had had acute hemolytic anemia, and 3 were undiagnosed, although one of these might possibly have been a case of neonatal hepatitis. Anderson has come to the conclusion that when these giant cells are found in an infant's liver, it cannot be dogmatically interpreted to mean that such an infant has had viral hepatitis, but probably indicates that this is the manner in which this particular liver responded to disease.

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Dr. Brick:

Certainly, fatal cases of viral hepatitis in children are quite uncommon. The experience at Children's Hospital is reflected in most cities. In Denver,<sup>1</sup> for instance, a five year survey of 40 cases of hepatitis in the Children's Hospital disclosed two deaths occurring in the acute stage, and one subsequent death in the subacute stage. This latter child was ill for eight weeks and died of subacute yellow atrophy which we now know to be a variant of necrosis of the liver probably due to viral hepatitis. All of us, of course, are at a handicap in saying that infectious hepatitis is due to a virus. The evidence is largely inferred from human volunteer experiments, the use of which has been abandoned due to several fatalities. Consequently, the viral etiology is very difficult to prove, but from the clinical point of view, there seems little question of the viral etiology in most cases.

The child presented today was normal until a month prior to admission. We are not given any history of injections which might raise a suspicion of homologous serum hepatitis. This diagnosis remains a possibility since most of the fatalities in children have been attributed to homologous serum hepatitis. This is particularly possible since children are more likely to get injections than adults.

Of interest is the fact that this child was ill some time before he became jaundiced. The occurrence of hepatitis without jaundice in the adult is a difficult diagnosis to make and in our opinion is almost impossible to confirm without a liver biopsy. Slight alterations in liver function tests are very difficult to interpret unless they occur during an obvious epidemic of hepatitis. This is not, however, true in children. For instance, Capps and his group<sup>2</sup> who studied an orphanage epidemic, reported 36 cases of infectious hepatitis in infants and small children, 35 of whom were without jaundice and one of whom was jaundiced. These investigators also performed human volunteer studies and found several adults to whom the disease was transmitted. The adults were not jaundiced. So apparently in infants and children the entity of anicteric hepatitis is much more common than it appears to be in adults. I am sure that many of you who see children would have these infants and children come to you with various upper respiratory or gastrointestinal symptoms. If liver function tests were performed routinely on these infants, some would undoubtedly show liver function abnormalities. Undoubtedly some of these abnormalities would be due to infectious hepatitis since in children it apparently may be a rather mild disease. What is typical of infectious hepatitis at this institution seems to be typical at other hospitals all over the United States.

From this hospital in 1947, Randolph and DeVito<sup>3</sup> reported 32 cases of viral hepatitis. There were no deaths in their group. The last death in a patient whom I personally treated occurred in the pediatric age group. This was an 8 year old child at another hospital who had been treated for viral hepatitis shortly before Christmas. At Christmas, the serum bilirubin was about 15 mg. per 100 ml. The child felt well and when the parents pleaded with the physician to send him home for Christmas, the physician agreed. The child was readmitted about January 3, having played actively with his siblings in the meantime; when I saw him on January 8 his serum bilirubin was 40 mg. per 100 ml. and in about six more days, climbed to 60 mg. per 100 ml. The child developed all the findings of hepatic failure including neurological manifestations of flapping tremor, positive bilateral Babinski reaction and mental confusion. Despite steroid therapy, he died in a very short period of time. This course is no different from what we occasionally see in the adult. The last death resulting from viral hepatitis which I observed in an adult occurred in an 18 year old South American girl who had the onset of her hepatitis while on the way from her home to Washington and who died with all the signs and symptoms of progressive hepatic failure.

The present case was convulsing when admitted to this hospital and was noted to be semicomatose—good clinical evidence of the considerable liver necrosis. This is also supported by the leukocytosis, the average case of infectious hepatitis in either child or adult having a low normal or low white blood cell count. The leukocytosis plus the elevation in temperature are also useful in indicating liver necrosis, and are the tip-off that a vigorous plan of therapy is necessary to save the patient's life.

The liver was not palpable in this child. This is easy to explain since postmortem examination showed a liver of about one-half normal size. In those cases of acute liver necrosis due to viral hepatitis, absence of hepatomegaly is the usual finding.

In the laboratory data, we note a very elevated prothrombin time, indicating practically no prothrombin formation by the liver. The marked hypoglycemia present in this case had the same significance as in other patients with liver disease in whom the prognosis is always extremely grave. The child had little clinical evidence of ascites or other obvious manifestations of liver decompensation. The serum electrolytes were relatively normal. When ascites is associated with acute liver failure, serum electrolytes are usually abnormal. The albuminuria present in this case is almost always found in the very severe cases of hepatitis or liver failure in general.

In situations such as this where the patient dies so quickly, it is impossible to study, much less treat, him adequately. In these severe cases of hepatitis, however, there has been a change in attitude about therapy. Of



course it is very difficult to evaluate therapy in a disease in which 95 per cent or more of patients are going to get well. But in the group of patients in whom we believe there is active liver necrosis with danger of fatal outcome, there is no question in my mind that the use of adrenal cortical steroids has made a difference.

In patients in whom we feel that the viral hepatitis is progressing into the acute necrotic phase we immediately start intravenous ACTH, 15 to 20 mg. given in eight hours, and continue this medication over a period of two to three days. After this period oral prednisone, 20 mg. daily for 7 to 10 days usually suffices. Generally speaking, there has been an improvement in these patients whom we have treated. Fortunately, we have been able to obtain liver biopsies in almost all of the patients we have treated in this way and we have histological evidence that there was a greater degree of necrosis than is generally seen in the average case of hepatitis. We have also had follow-up biopsies in 2 patients, two and four weeks after ACTH therapy respectively; we were able to demonstrate fairly markedly improved histological changes in the second biopsies in both these patients. Certainly, in severe hepatitis, I do not think that anyone who has treated any number of these cases doubts that the administration of adrenal steroids is indeed helpful and may be life-saving, particularly when the patient is admitted at an earlier stage than was true in the present case, i.e., before neurological signs become evident.

The last steroid-treated case we have observed was a 22 year old man who initially appeared to have an average case of hepatitis. He had been in the hospital for four days, and had been progressing satisfactorily with a serum bilirubin level of about 8 mg. per 100 ml. Then one night he complained of twitching about the lips, several hours later became irrational, and then became drowsy and apathetic. At that point we thought that he was definitely entering the necrotic phase of viral hepatitis, and we started him immediately on adrenal corticosteroids. In a matter of 48 hours, the tide had turned despite a rising serum bilirubin and white blood count.

In the average adult with viral hepatitis, if the patient is followed very carefully with serial laboratory tests, one will find a phase during which there is an obstructive element. This is noted most simply by performing a daily urine urobilinogen determination; in some of the cases the urine urobilinogen may be zero or very low for several days and sometimes for several weeks. This obstructive phase may last so long that, in the absence of a liver biopsy, it becomes difficult to determine whether one is dealing with viral hepatitis or extrahepatic obstructive jaundice.

Furthermore, in some cases, it is interesting to note that the alkaline phosphatase may be elevated beyond the levels we usually see in parenchymal jaundice. If the normal adult level of serum alkaline phosphatase is



0 to 6 Bodansky units, in hepatitis or decompensating cirrhosis, a not unusual level is 12 to 14 Bodansky units. Occasionally, however, either adults or children with viral hepatitis may have serum levels of 25 to 30 Bodansky units; surgery is frequently performed on these patients, only to find that instead of the expected obstructive jaundice, a liver biopsy reveals the changes typical of viral hepatitis.

We have a small group of cases which Watson and Hoffbauer<sup>4</sup> choose to call cholangiolitic hepatitis, a variant of viral hepatitis. Not all pathologists agree with them that this is a separate entity from viral hepatitis. In these cases, however, all the laboratory earmarks of obstruction are present. It becomes quite a problem since occasionally hepatitis becomes worse after surgery is performed. We firmly believe, however, that when it is not possible to differentiate clinically between viral hepatitis and extra-hepatic obstruction in the adult, liver biopsy will give us the answer in 85 to 90 per cent of cases. This percentage is not as high in children as it is in adults.

Transplacental transmission of the virus has been brooded about in the literature quite a bit. My own experience with pregnant women who contract viral hepatitis is that their infants very rarely have anything wrong with them. Zondek and Bromberg<sup>5</sup> reported 29 cases of infectious hepatitis occurring during pregnancy. Five women died of acute yellow atrophy of the liver and two developed chronic hepatitis, indicating that in hepatitis occurring during pregnancy, complications are more probable. Premature deliveries were more frequent in the women with severe hepatitis but no effect on the fetus could be demonstrated.

Is there a difference in the type of hepatitis referred to by Dr. Guin as giant cell hepatitis from the ordinary viral hepatitis in infants and children? Popper and Shaffner in their recent book<sup>6</sup> have a separate section on giant cell hepatitis and point out that there is no real evidence that this is of viral etiology. They admit they do not know exactly what it is. Boggs<sup>7</sup> has reported one infant with neonatal hepatitis in whom histologic section showed distortion of the liver cords and the typical findings of giant cell hepatitis. He performed human volunteer studies with both the stool filtrate and pooled serum of infant and mother and could not demonstrate any evidence of liver disease in the volunteers. He suggests that other causes for neonatal hepatitis should be considered. Some authorities believe that the reaction of the infant's liver in the neonatal period to the virus of hepatitis with the ballooning of giant cells is merely a reflection of the infant's cell response to the disease.

There is no doubt that, by and large, viral hepatitis fortunately is a rather benign disease. We should all be on the alert, however, for the wave of liver necrosis that occasionally occurs. Helpful clinical leads are changes

in the mental attitude of the patient and the neurological signs, especially the flapping tremor, both of which appear long before the other signs appear. Rarely, one may see fulminating viral hepatitis without jaundice. The onset of the disease is so rapid and the neurological changes so overwhelming that jaundice has not yet occurred by the time the patient is dead of liver failure.

Observing a fatal case of viral hepatitis certainly gives one a bit more respect for the disease, especially since as we treat the disease day in and day out, we see so many young people who, after several days, do not appear very ill, and even though jaundiced, are eating and feeling well. They wonder why they have to be in the hospital or at home on bed rest. It is only when there is a sudden turn for the worse with the appearance of a fulminating hepatitis that we become more cautious and want to treat the disease very conservatively.

In the average case of infectious hepatitis, we feel that patients should be at modified bed rest (bathroom privileges) as long as they have a serum bilirubin above 1.5 to 2.0 mg. per 100 ml. When the serum bilirubin level falls below these values, we perform a Bromsulphalein test. If this is within normal limits, we allow that patient to start activating himself gradually. We do not depend on the flocculation tests in determining activity of the disease since, in viral hepatitis, the cephalin flocculation and thymol turbidity tests may remain positive for months or years and yet have no relationship to disease activity; this has been conclusively shown by liver biopsy studies.

The diet should be nutritious and of adequate caloric value. We allow these patients to eat a regular hospital or home diet. Many can eat butter, cream and ice cream without a bit of difficulty. If intolerance to fatty, greasy and fried foods is manifested, these foods are discontinued. Data concerning the fact that high protein diets shorten the convalescence are not too convincing. Furthermore, in patients in whom the disease takes a fulminating course, high protein diets actually add to the strain on the liver.

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## Untoward Reactions Following the Use of Prochlorperazine (Compazine): A Report of Two Cases

SALVATORE V. BATTIATA, M.D.,\* AND WILLIAM R. O'REILLY, M.D.†

The availability of potent and effective antiemetic drugs has promoted an almost universal acceptance of these agents by practicing physicians. The addition, in recent months, of a new potent member of that class of compound, prochlorperazine (Compazine®), has offered the pediatrician an effective means of treating the common and frequent symptom of vomiting.

Of late, case reports<sup>1-3</sup> have clearly illustrated that severe extrapyramidal neurological reactions may occur following the administration of prochlorperazine. These occurred in some instances when an overdosage was given; in other instances however, therapeutic dosage schedules were followed.

Recently we have had occasion to observe 2 patients whose illness could be ascribed in part to prochlorperazine effect. Because the signs and symptoms they displayed could offer a worrisome problem in differential diagnosis for the conscientious practitioner, the following cases are reported.

### CASE 1

K. B., a 9 year old white boy was admitted to Children's Hospital October 5, 1958 with a tentative diagnosis of aseptic meningitis or viral encephalitis with secondary ocular palsies.

During the three day period prior to admission this patient, who had been in good health previously, complained of fever, headache, nausea and rhinorrhea. Symptomatic treatment with aspirin, Chlortrimeton® and nose drops partially relieved the pyrexia and rhinorrhea. Compazine® in a dosage of 5 mg. orally one day prior to admission and 5 mg. twice on the day of admission was used to combat nausea. On the day of admission the patient was lethargic, and after the third Compazine dose, two hours before being seen at the hospital, he experienced stiffness of the neck, retrocollis, oculogyric crises, tremors of the head and tongue, and chattering

\* Assistant Chief Resident, Children's Hospital.

† Research Fellow, Adolescent Medicine, Formerly Chief Resident, Children's Hospital.

of the teeth. There was also an associated complaint of pain in the head and neck region. The tremorous episodes lasted one to two minutes and recurred approximately every 10 to 15 minutes up to the time he was seen at the hospital.

On admission the physical examination disclosed the presence of moderate (one plus) nuchal rigidity. The remainder of the examination, including funduscopic, was normal.

Results of CBC and spinal tap were within normal range. During hospitalization the patient experienced no new episodes and was discharged 15 hours after admission.

#### CASE 2

M. M., a 13 year old white boy entered Children's Hospital October 23, 1958. During the 72 hours prior to admission he had experienced several episodes of vomiting, for which he was treated with chlortetracycline and Coca Cola syrup beginning 48 hours prior to admission.

During the 24 hour period prior to admission he received a total dose of 100 mg. of Compazine® orally (25 mg. every six hours). He gradually became lethargic and several hours prior to admission began experiencing tonic neck spasms lasting approximately five minutes.

Physical examination at the time of admission showed an alert, excited, slightly dehydrated youth who complained of right sternocleidomastoid spasm. There was no nuchal rigidity and the deep tendon reflexes were hyperactive, with a suggestion of ankle clonus.

Laboratory data were normal except for urine findings consistent with dehydration.

The following 24 hour period of hospitalization was marked by several episodes, characterized by turning of the head to the right and holding it in a fixed position, masseter spasm, increased muscle tonus in the right leg and marked apprehension. These lasted approximately five minutes. No specific treatment was administered except for discontinuance of prochlorperazine.

He was discharged asymptomatic 24 hours after admission.

#### DISCUSSION

Prochlorperazine, an antiemetic drug having three times the potency of other phenothiazine derivatives<sup>4</sup> exerts its effect by blocking emetic stimuli from the chemoreceptor trigger zone and acts centrally by depressing the medullary vomiting center.<sup>5</sup> It produces its desired therapeutic effect at dosage levels approximately one-half those required with chlorpromazine.<sup>6</sup>

When administered in the recommended dosage (see accompanying table), mild transient side effects which may be encountered are drowsiness, dizziness, skin rash and slight tremor.<sup>7-9</sup> However, in a number of cases, more severe neurological symptoms such as extensor rigidity of the back, carpopedal spasm, trismus, opisthotonus, oculogyric crises, torticollis, athetosis, dysphagia, protraction of the tongue and speech impairment have been noted. In general, there is development of a syndrome incorporating elements of Parkinsonism and chorea.

These severe symptoms have been reported even after low doses of prochlorperazine were administered.<sup>1-3</sup> It is interesting to note that in the

*Recommended Dosage of Prochlorperazine for Nausea and Vomiting in Children*<sup>10</sup>

Weight	Syrup (5 mg./tsp.)	Suppositories (5 mg.)	Not to Exceed
<i>lbs.</i>			<i>mg./day</i>
20-29	$\frac{1}{2}$ tsp. (2.5 mg.) once or twice a day.	$\frac{1}{2}$ suppository (2.5 mg.) once or twice a day.	7.5
30-39	$\frac{1}{2}$ tsp. (2.5 mg.) twice or three times a day.	$\frac{1}{2}$ suppository (2.5 mg.) twice or three times a day.	10.0
40-85	$\frac{1}{2}$ tsp. (2.5 mg.) three times a day, or 1 tsp. (5 mg.) twice a day.	$\frac{1}{2}$ suppository (2.5 mg.) three times a day, or 1 suppository (5 mg.) twice a day.	15.0

cases reported above, the clinical symptoms were essentially similar, even though one patient received a therapeutic amount, and the other received more than the recommended dosage. This parallels the experience of others.<sup>9</sup>

The practical implication of our experience is obvious. The possibility of an idiosyncrasy to therapeutic levels of prochlorperazine must be kept in mind by the physician who prescribes this medicament. It is easy to see how the extrapyramidal signs might possibly be confused with meningitis, tetany, encephalitis, electrolyte imbalance, chorea and psychophysiological musculoskeletal reactions. Such a bizarre dystonic reaction could not only confuse the picture of a relatively minor illness, but could also promote excessive anxiety on the part of patient and family and lead to distasteful traumatic laboratory procedures and the administration of unnecessary drugs for mistaken diagnoses (e.g. antibiotics for meningitis).

#### SUMMARY

Two children showed striking neurological findings following the use of prochlorperazine, in one case at recommended dosage levels.

The importance of recognizing this idiosyncrasy is stressed.

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## The Editor's Column

C. MELVIN SHARP HEALTH SCHOOL

Education of physically handicapped children has changed considerably during the past 50 years. Much of this is due not only to the greater interest in, and understanding of, the problems shown on the part of the educators, but also to the active support of physicians and families of the children themselves. Even the definition of the term "physically handicapped" has been broadened to include children with conditions such as cardiac anomalies, epilepsy, sickle cell anemia, and hemophilia as well as the more orthodox neuro-motor difficulties.

Knowledge and understanding of the child, his problem, and the basis of treatment will go a long way in furthering his education. Studies done in different cities have shown that with the exception of children with cerebral palsy, the measured intelligence of children in special classes for the crippled does not essentially differ from that of the general school population. However, the social adjustment of the handicapped child will differ from that of his nonhandicapped classmates. It thus becomes apparent that the handicapped child has the same educational requirements as any child plus some additional needs due to his disability. In all states schooling for children between certain ages is mandatory. Therefore school programs for the handicapped child must be planned to further his intellectual, social, and emotional development.

It had long been felt that handicapped children could and should only be taught at home or in a convalescent hospital setting. This view is no longer held. Some school systems make it possible for such a child to attend regular



classes wherever possible. Another type of arrangement is to have special classes located in the regular school building. However, it would appear that the most appropriate arrangement, at least for the more severely handicapped child, is the complete special unit where the teachers and therapists are housed in one wing of the school building if not in a separate building itself.

We in the District of Columbia are fortunate to have such a building specially conceived and constructed to meet the educational and therapeutic requirements of handicapped children. On March 8, 1959, the C. Melvin Sharpe Health School was formally dedicated to the above principle. This is a one story, H-shaped, brick, glass, and reinforced concrete structure with classrooms opening onto concrete terraces located on a  $3\frac{1}{2}$  acre site in Northwest Washington. It has a total capacity of 450 elementary, junior and senior high school pupils of whom 200 are classroom students (who are picked up and returned home in buses from and to all parts of the city), and 250 are homebound or hospitalized and are serviced by visiting teachers. In addition to the usual classrooms, laboratory facilities, lunchroom, and kitchen, there are a medical and dental unit, a speech therapy room, and therapy rooms specially constructed for activities for daily living, functional therapy, hydrotherapy, and occupational and physical therapy. There are, in addition to the school staff of teachers trained in special education, a speech therapist, five physical therapists, an occupational therapist, and a registered nurse. The physical and occupational therapy programs are carried out under the supervision of an experienced orthopedist and physiatrist, and a pediatrician is the school health officer. It should be pointed out that either the private physician or a clinic may make referrals of appropriate children, and it is they who prescribe whatever specific therapeutic program the child is to have. They are also kept informed as to the progress the child might or might not be making.

It is only in such an environment with the educator working closely with the therapist, physician, and family that the handicapped child can ever have his needs met and be given the best opportunity of obtaining a happy and productive education.

M. S. G.



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